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BARRIERS TO PHYSICAL ACTIVITY AMONG OLDER ADULTS LIVING IN RURAL AND URBAN AREAS

BARREIRAS À PRÁTICA DE ATIVIDADE FÍSICA ENTRE PESSOAS IDOSAS RESIDENTES EM ÁREAS RURAIS E URBANAS

BARRERAS PARA LA PRÁCTICA DE ACTIVIDAD FÍSICA ENTRE PERSONAS MAYORES RESIDENTES EN ÁREAS RURALES Y URBANAS

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ABSTRACT

Regular physical activity plays a fundamental role in healthy aging; however, several individual factors may hinder adherence among older adults. This study analyzed the main perceived barriers to physical activity among older adults living in urban and rural areas of a municipality in southern Brazil. A descriptive, cross-sectional, household-based study was conducted with 208 participants (141 urban and 67 rural residents) selected from an initial sample of 289 older adults. Sociodemographic data and perceived barriers to physical activity were collected using the Personal Barriers Questionnaire (PBQ), and categorical variables were compared using Pearson's chi-square or Fisher's exact test. Women represented 61.5% of the sample. The most frequently reported barriers were not liking physical activity (84.6%) and lack of time (82.2%). Feeling lazy or tired was significantly more common among women living in urban areas (47.3%; p = 0.045), while injury or illness interfering with physical activity participation was more frequently reported by women than by men (47.7% vs. 32.5%; p = 0.044). These findings indicate that perceived barriers differ according to sex and place of residence, emphasizing the importance of considering these characteristics when designing interventions and public policies aimed at increasing physical activity participation and promoting active and healthy aging.

KEYWORDS: *Aged. Physical activity. Urban area. Rural area. Sedentary behavior.*

RESUMO

A prática regular de atividade física desempenha papel fundamental no envelhecimento saudável, embora diversos fatores individuais possam dificultar sua adesão entre pessoas idosas. Este estudo analisou as principais barreiras percebidas para a prática de atividade física entre pessoas idosas residentes em áreas urbanas e rurais de um município do sul do Brasil. Foi realizado um estudo transversal, descritivo e de base domiciliar com 208 participantes (141 residentes na área urbana e 67 na área rural), selecionados de uma amostra inicial de 289 pessoas idosas. Foram coletadas informações sociodemográficas e avaliadas as barreiras percebidas por meio do *Personal Barriers Questionnaire* (PBQ), sendo as comparações realizadas pelos testes do qui-quadrado de Pearson ou exato de Fisher. As mulheres representaram 61,5% da amostra. As barreiras mais frequentes foram não gostar de atividade física (84,6%) e falta de tempo (82,2%). Sentir-se com preguiça ou cansado foi mais frequente entre mulheres residentes na área urbana (47,3%; p = 0,045), enquanto lesão ou doença que interfere na prática de atividade física foi mais relatada por mulheres do que por homens (47,7% versus 32,5%; p = 0,044).

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Os resultados demonstram que as barreiras variam conforme o sexo e o local de residência, destacando a necessidade de estratégias e políticas públicas direcionadas à promoção do envelhecimento ativo e saudável.

PALAVRAS-CHAVE: *Idoso. Atividade física. Área urbana. Área rural. Comportamento sedentário.*

RESUMEN
La práctica regular de actividad física desempeña un papel fundamental en el envejecimiento saludable; sin embargo, diversos factores individuales pueden dificultar su realización entre las personas mayores. Este estudio analizó las principales barreras percibidas para la práctica de actividad física entre personas mayores residentes en áreas urbanas y rurales de un municipio del sur de Brasil. Se realizó un estudio transversal, descriptivo y de base domiciliaria con 208 participantes (141 residentes en áreas urbanas y 67 en áreas rurales), seleccionados de una muestra inicial de 289 personas mayores. Se recopilaron datos sociodemográficos y las barreras percibidas mediante el Personal Barriers Questionnaire (PBQ), y las comparaciones se realizaron utilizando las pruebas de chi-cuadrado de Pearson o exacta de Fisher. Las mujeres representaron el 61,5% de la muestra. Las barreras más frecuentes fueron no gustar de la actividad física (84,6%) y la falta de tiempo (82,2%). Sentirse perezoso o cansado fue significativamente más frecuente entre las mujeres residentes en áreas urbanas (47,3%; p = 0,045), mientras que la presencia de lesiones o enfermedades que interferían con la práctica de actividad física fue reportada con mayor frecuencia por las mujeres que por los hombres (47,7% frente a 32,5%; p = 0,044). Estos resultados muestran que las barreras varían según el sexo y el lugar de residencia, lo que refuerza la necesidad de desarrollar estrategias y políticas públicas orientadas a promover un envejecimiento activo y saludable.

PALABRAS CLAVE: *Persona mayor. Actividad física. Área urbana. Área rural. Comportamiento sedentario.*

INTRODUCTION

The aging of the Brazilian population poses significant challenges to the healthcare system, considering that by 2030 approximately 13.4% of Brazilians will be aged 65 years or older [1]. Aging is a natural, continuous, and irreversible process characterized by biopsychosocial changes. These changes result from several factors, including socioeconomic conditions, lifestyle, and chronic diseases. The demographic transition observed in recent decades has led to substantial changes in society's lifestyle. Furthermore, an important aspect should be highlighted: although women tend to have greater longevity, they also experience a higher burden of multimorbidity throughout the aging process [2].

Although the benefits of regular physical activity are well established, including disease prevention and treatment, as well as reduced mortality, adherence to physical activity among older adults remains insufficient [3]. Urbanization and increased sedentary leisure time contribute to physical inactivity, which, in turn, leads to important physiological changes [4].

The environment in which older adults live is also one of the factors influencing the aging process [5]. Differences in infrastructure between rural and urban areas, as well as the characteristics

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of their populations, may compromise health conditions and quality of life when their specific needs are not adequately addressed [6].

In urban areas, regular physical activity is essential, whereas in rural settings, social interactions play a central role [7]. Although urban environments provide better access to healthcare services, community ties and active lifestyles in rural areas favor quality of life, highlighting both benefits and challenges in each context [8]. Mobility in rural areas has been associated with better self-perceived health, reinforcing the need for strategies tailored to the specific characteristics of each setting [9].

Perceived barriers exert a significant influence on the adoption of healthy behaviors and disease prevention strategies. Such barriers result from a combination of personal, environmental, and socioeconomic factors that collectively shape individual health-related decisions. Understanding these limitations is essential for developing effective interventions aimed at promoting healthier lifestyles. Regular physical activity (PA) is widely recognized as fundamental for maintaining health and preventing chronic diseases; however, several obstacles hinder adherence. These barriers can be classified as individual, social, environmental, and institutional and may vary according to the population context [10].

In this context, individual barriers deserve particular attention, as they play a central role in determining physical activity behavior. Factors such as low motivation, poor self-efficacy, and fear of injury constitute important impediments to PA participation. Furthermore, conditions such as chronic pain and fatigue, particularly among individuals with physical limitations, further aggravate the difficulties associated with engagement in regular physical activity [11]. Lack of time, often attributed to occupational and family responsibilities, is among the most frequently reported barriers across different population groups [10]. Likewise, lack of willpower and motivation is recurrent, especially among young individuals and people with chronic conditions such as diabetes [12].

A recent study involving older adults from Florianópolis, Santa Catarina, Brazil, identified laziness, lack of interest or enjoyment, and low motivation as the main barriers to leisure-time physical activity. Moreover, older women perceived more barriers than men, whereas higher educational attainment was associated with a lower perception of obstacles [13].

Active aging should continue to be the focus of scientific investigations and greater investments in public policies, as physically active older adults experience important biopsychosocial benefits [14]. In light of the above, the present study aimed to analyze the main individual barriers to physical activity practice among older adults living in urban and rural settings.

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MATERIALS AND METHODS

Study Design and Setting

This study was a descriptive, cross-sectional, household-based investigation [15] conducted in both urban and rural areas of the municipality of Santa Maria, Rio Grande do Sul, southern Brazil.

In 2016, when data collection began, Santa Maria had an estimated population of 277,309 inhabitants, a Municipal Human Development Index (MHDI) of 0.784, and approximately 33,000 adults aged 60 years and older [1]. The municipality is administratively divided into 41 urban neighborhoods and nine rural districts.

To ensure representativeness according to socioeconomic characteristics and population distribution, three urban neighborhoods and three rural districts were selected based on average income and the proportion of older adults residing in each locality.

In the urban area, neighborhoods representing low-, middle-, and high-income levels were selected, all presenting proportions of older adults ranging from 2.0% to 3.99%: Neighborhood 1 (605 older adults), Neighborhood 2 (620 older adults), and Neighborhood 3 (938 older adults). In the rural area, districts with proportions ranging from 4.80% to 5.89% were selected: District 1 (149 older adults), District 2 (157 older adults), and District 3 (128 older adults).

Study Population and Sample Selection

The target population comprised community-dwelling adults aged 60 years and older residing in the selected urban and rural areas of Santa Maria.

Sample size estimation was performed using the finite population formula ($n = Z^2 \times P \times Q \times N / e^2 \times (N - 1) + Z^2 \times P \times Q$). For the urban area, considering a population of 33,000 older adults, a confidence level of 95%, a significance level of 5%, and a precision of 3%, the estimated minimum sample size was 202 participants. For the rural area, considering a population of 434 older adults, a statistical power of 80%, a significance level of 5%, and a precision of 3%, the estimated minimum sample size was 72 participants.

Accordingly, 202 older adults from urban areas and 72 from rural areas were included in the study, representing approximately 10% of the older population in the selected urban neighborhoods and 19% of that in the selected rural districts.

Eligibility Criteria

Individuals were eligible for inclusion if they were 60 years of age or older and resided in one of the selected urban neighborhoods or rural districts.

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Participants were excluded if they: (i) had musculoskeletal injuries or conditions that prevented participation in physical activities and/or active mobility; (ii) resided in long-term care facilities for the elderly; or (iii) did not provide complete responses.

Data Collection Procedures

Data collection was conducted during the second semester of 2016. Interviewers received prior training to standardize the assessment procedures and were identified by badges and institutional T-shirts during fieldwork.

A pilot study was carried out before the main data collection phase to verify the applicability and clarity of the assessment instruments. Additionally, the study was disseminated through local healthcare units and administrative offices in the selected rural districts to facilitate participant recruitment.

After receiving information about the study objectives and procedures, all participants provided written informed consent before completing the assessments.

Study Measures

A structured questionnaire was developed to gather information on sociodemographic characteristics—including age, sex, education level, housing conditions, marital status, and income—as well as health-related variables.

Participants completed a questionnaire assessing personal barriers to physical activity participation [16]. The instrument consists of eight dichotomous items (yes/no) assessing perceived individual barriers to physical activity and has been previously validated for the Brazilian population [17].

Statistical Analysis

Categorical variables were expressed as absolute and relative frequencies [n (%)]. Comparisons between groups were performed using Pearson's chi-square test or Fisher's exact test when appropriate (i.e., when expected cell frequencies were <5). All statistical tests were two-tailed, and statistical significance was established at $p < 0.05$.

Ethical Considerations

The study was approved by the Research Ethics Committee involving Human Beings (Protocol No. 1,082,661; CAAE: 43071815.5.0000.5346). All procedures complied with the ethical principles established by the Brazilian National Health Council Resolutions No. 466/2012 and No. 510/2016. All participants provided written informed consent prior to participation.

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RESULTS

A total of 289 older adults were interviewed. Of these, 81 (28.0%) were excluded, resulting in a final sample of 208 participants (72.0%). Among the included participants, 141 (67.8%) resided in urban areas and 67 (32.2%) in rural areas.

The descriptive characteristics of the sample, according to place of residence, are presented in Table *1*. Women represented the majority of the sample in both urban (n = 91, 64.5%) and rural (n = 37, 55.2%) areas, while men represented 50 (35.5%) and 30 (44.8%) participants, respectively. No statistically significant differences were observed between urban and rural residents regarding sex, age group, socioeconomic level, or marital status (all $p > 0.05$).

Table 1. Descriptive and comparative characteristics of older adults according to place of residence (urban and rural areas) in Santa Maria, Rio Grande do Sul, Brazil

Characteristics	Total n (%)	Urban n (%)	Rural n (%)	p*
Groups	208 (100%)	141 (67.8%)	67 (32.2%)	
Sex				0.197
Male	80 (38.4%)	50 (35.5%)	30 (44.8%)	
Female	128 (61.5%)	91 (64.5%)	37 (55.2%)	
Age (years)				0.314
60–69	106 (50.9%)	67 (47.5%)	39 (58.2%)	
70–79	71 (34.1%)	50 (35.5%)	21 (31.3%)	
≥80	30 (14.4%)	23 (16.3%)	7 (10.4%)	
Socioeconomic status				0.656
Low	67 (32.2%)	48 (34.0%)	19 (28.4%)	
Middle	68 (32.7%)	46 (32.6%)	22 (32.8%)	
High	73 (35.1%)	47 (33.3%)	26 (38.8%)	
Marital status				0.210
Single	9 (4.3%)	6 (4.3%)	3 (4.5%)	
Married	123 (59.1%)	77 (54.6%)	46 (68.7%)	
Separated	17 (8.2%)	15 (10.6%)	2 (2.9%)	
Widowed	59 (28.4%)	43 (30.5%)	16 (23.9%)	

Source: Authors' own data. Values are presented as absolute and relative frequencies [n (%)]. P-values were obtained using Pearson's chi-square test or Fisher's exact test, as appropriate, for comparisons between older adults living in urban and rural areas. Statistical significance was set at $p < 0.05$.

Table *2* presents the frequency of perceived personal barriers (PP) to participation in physical activities, according to sex and place of residence. Among men in urban areas, the most frequently reported barriers were lack of time (n = 44, 88.0%) and aversion to physical activity (n = 43, 86.0%). Similarly, among men in rural areas, lack of time (n = 23, 76.7%) and aversion to physical activity (n = 22, 73.3%) were the most prevalent barriers.

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Among urban women, aversion to physical activity was the most frequently reported barrier (n = 79, 86.8%), followed by lack of time (n = 72, 79.1%). Among rural women, aversion to physical activity and lack of time were equally prevalent, reported by 32 participants each (86.5%).

A statistically significant difference was observed for the "feeling lazy or tired" barrier among the four groups analyzed according to sex and place of residence (p = 0.045). The highest prevalence was observed among women residing in urban areas, with 43 participants (47.3%) reporting this barrier.

Table 2. Frequencies of perceived personal barriers to physical activity participation and comparisons according to sex and place of residence among older adults from Santa Maria, Rio Grande do Sul, Brazil

Personal barriers	Urban Men n (%)	Urban Women n (%)	Rural Men n (%)	Rural Women n (%)	p*
1. Feeling too old	4 (8.0)	8 (8.8)	5 (16.7)	4 (10.8)	0.602
2. Injury or illness	19 (38.0)	46 (50.5)	7 (23.3)	15 (40.5)	0.060
3. Not liking physical activity	43 (86.0)	79 (86.8)	22 (73.3)	32 (86.5)	0.328
4. Feeling lazy or tired	14 (28.0)	43 (47.3)	9 (30.0)	10 (27.0)	**0.045***
5. Lack of money	8 (16.0)	24 (26.4)	9 (30.0)	12 (32.4)	0.299
6. Fear of getting injured	11 (22.0)	33 (36.3)	8 (26.7)	9 (24.3)	0.266
7. Lack of companionship	20 (40.0)	40 (44.0)	13 (43.3)	21 (56.8)	0.451
8. Lack of time	44 (88.0)	72 (79.1)	23 (76.7)	32 (86.5)	0.418

Source: Authors' own data. Values are presented as absolute and relative frequencies [n (%)]. Percentages refer to affirmative ("yes") responses for each perceived barrier. P-values were obtained using Pearson's chi-square test or Fisher's exact test, as appropriate, for comparisons among urban men, urban women, rural men, and rural women. Statistical significance was set at $p < 0.05$.

Table 3 presents a comparison of perceived personal barriers to participation in physical activities according to sex, regardless of place of residence. Among men, the most frequently reported barriers were lack of time (n = 67, 83.8%) and not liking physical activity (n = 65, 81.3%). Similarly, among women, not liking physical activity (n = 111, 86.7%) and lack of time (n = 104, 81.3%) were the most commonly reported barriers.

A statistically significant difference was identified for the barrier "injury or illness that interferes with participation in physical activities" (p = 0.044). This barrier was reported by 61 women (47.7%) and 26 men (32.5%), indicating a higher prevalence among women.

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Table 3. Comparative analysis of perceived personal barriers to physical activity participation according to sex among older adults from Santa Maria, Rio Grande do Sul, Brazil

Personal barriers	Men n (%)	Women n (%)	p*
1. Feeling too old	9 (11.3)	12 (9.4)	0.841
2. Injury or illness interfering with physical activity	26 (32.5)	61 (47.7)	**0.044***
3. Not liking physical activity	65 (81.3)	111 (86.7)	0.386
4. Feeling lazy or tired	23 (28.8)	53 (41.4)	0.090
5. Lack of money	17 (21.3)	36 (28.1)	0.345
6. Fear of getting injured	19 (23.8)	42 (32.8)	0.215
7. Lack of companionship	33 (41.3)	61 (47.7)	0.447
8. Lack of time	67 (83.8)	104 (81.3)	0.785

Source: Authors' own data. Values are presented as absolute and relative frequencies [n (%)]. Percentages refer to affirmative ("yes") responses for each perceived barrier. P-values were obtained using Pearson's chi-square test or Fisher's exact test, as appropriate, for comparisons between men and women. Statistical significance was set at $p < 0.05$.

DISCUSSION

The present study aimed to analyze the main individual barriers to physical activity participation among older adults living in urban and rural areas of Santa Maria, Rio Grande do Sul, Brazil. A statistically significant difference was identified for the barrier “feeling lazy or tired” among the groups analyzed according to sex and place of residence, with this perception being more frequent among women living in urban areas. A statistically significant difference was also observed between women and men regarding the barrier related to the presence of an injury or illness that interferes with physical activity participation, with a higher frequency among women. Supporting the findings of the present study, Silva [13] demonstrated that older women perceived more barriers to physical activity participation than men, highlighting the greater vulnerability of this group to factors that hinder engagement in physical activity. Furthermore, the study revealed that perceived barriers are associated with multiple dimensions, including environmental, sociodemographic, and behavioral variables, reinforcing the importance of integrated approaches to promoting physical activity among older adults.

The perceived barriers among urban and rural women showed distinct patterns, revealing the sociocultural and economic specificities of each environment. Older women living in urban areas face challenges related to safety in public spaces and to balancing occupational activities with domestic responsibilities, whereas those residing in rural areas experience more pronounced structural and cultural limitations, including reduced access to services, leisure opportunities, and programs that encourage exercise participation [18]. An example of this is the study by Silva et al. [19], which reported that the lack of infrastructure in smaller cities limits physical activity participation, highlighting the importance of providing support for older adults and expanding access

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to safe environments. This distinction underscores the importance of public policies and interventions that simultaneously address inequalities related to sex and place of residence.

The perception of “feeling lazy or tired” among older urban women, which was more frequent than among rural women and men, results from a complex interaction of biological, psychological, and social factors. Older women residing in urban areas tend to report higher levels of fatigue, often associated with the accumulation of occupational, domestic, and family responsibilities, which reduces the time available for leisure and self-care [18]. Furthermore, factors such as harassment and perceptions of insecurity in public environments limit female mobility and autonomy, even in urban areas with better physical and social infrastructure [20,21].

Another relevant finding, with a statistically significant difference, was that women reported a higher occurrence of “diseases and injuries that negatively interfere with physical activity participation.” This result reinforces evidence indicating greater female vulnerability, particularly among older women, resulting from a combination of biological, social, and health-related factors that contribute to the higher prevalence of chronic conditions and functional limitations [22]. The high incidence of diseases and injuries among older women may be explained by interrelated factors, such as physical inactivity, the presence of pre-existing conditions, and social perceptions associated with aging, which not only increase the risk of injury but also reduce engagement in regular activities and hinder the maintenance of an active lifestyle [23].

Evidence demonstrates that many older women do not achieve the recommended levels of physical activity [24], although such practice is essential for preserving health, maintaining functionality, and reducing the risk of falls. Participation in leisure-time physical activity for at least 150 minutes per week is associated with a lower likelihood of both injurious and non-injurious falls [23]. An Australian longitudinal study on women's health identified a marked decline in physical activity levels with advancing age, particularly among women aged 80 years and older [25]. Moreover, chronic conditions such as hypertension and arthritis are more prevalent among older women, restricting exercise participation and increasing the risk of new injuries [22].

Barriers to physical activity participation vary according to socioeconomic context and reflect biological, financial, and motivational factors. In a study conducted with older adults from different neighborhoods of Santa Maria, Rio Grande do Sul, the most frequently reported barriers were “having an injury or illness” and “feeling lazy or tired,” with the latter being more frequent among participants with lower socioeconomic status. In contrast, barriers such as “feeling too old” and “not liking physical activity” were the least frequently reported [11]. These findings corroborate previous studies indicating that older adults with lower purchasing power mainly perceive environmental, psychocognitive, and emotional factors as barriers, whereas those with higher socioeconomic status tend to report biological and sociodemographic aspects [16,26]. Although the study by Dornelles et al. [11] did not identify statistically significant differences between men and women regarding the

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frequency of barriers, the authors emphasized that women generally reported more physical limitations and feelings of fatigue, which is consistent with the national literature on this topic [26].

Finally, older adults residing in both urban and rural areas reported not liking physical activity, whereas those living in rural settings also mentioned lack of time as an additional obstacle. This aversion may be explained by a combination of environmental, psychological, and physical factors that affect motivation and self-efficacy for exercise. In urban areas, insecurity and the scarcity of adequate and well-maintained public spaces are among the main perceived barriers [27].

In rural settings, however, limited infrastructure, lower social support, and poor self-efficacy perceptions hinder engagement in regular physical activity [27]. These differences reinforce that, whereas older adults living in urban environments face obstacles related to safety and the built environment, those in rural areas are affected by structural and sociocultural limitations, highlighting the need for differentiated policies and strategies to promote physical activity according to each geographical context.

Promoting active aging, with a focus on autonomy and quality of life among older adults, requires greater investment in public policies. Older adults who maintain a physically active lifestyle exhibit better functional fitness, which contributes both to individual stability and to social engagement [14]. In this context, the development of strategies that encourage regular physical activity participation is essential to minimize the negative impacts of aging, as well as to foster participation in social, economic, and physical activities that strengthen well-being and social inclusion [28,29].

This study has some limitations that should be acknowledged. First, the cross-sectional design does not allow causal inferences regarding the relationship between sociodemographic characteristics and perceived barriers to physical activity participation. Second, the use of self-reported measures may have introduced recall and social desirability biases. Third, older adults with cognitive impairment were excluded from the study, which may limit the generalizability of the findings to the entire older adult population. Finally, because the study was conducted in a single municipality in southern Brazil, caution is warranted when extrapolating these results to other geographical and sociocultural contexts.

Despite these limitations, the present study has important strengths. To our knowledge, this is one of the few Brazilian studies to simultaneously examine perceived barriers to physical activity according to both sex and place of residence among community-dwelling older adults. The findings provide novel evidence on differences in perceived barriers between urban and rural settings and between men and women, offering valuable information for the development of targeted interventions and public policies aimed at increasing physical activity participation and promoting active and healthy aging.

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CONCLUSION

The present study demonstrated that individual barriers to physical activity participation among older adults are highly prevalent, with lack of interest in exercising and lack of time emerging as the most frequently reported barriers, regardless of place of residence. However, the comparative analyses revealed important differences between groups: women living in urban areas more frequently reported feelings of laziness or tiredness. Furthermore, when sex was analyzed independently of place of residence, women reported a higher frequency of injuries or illnesses that hinder physical activity participation. These findings suggest that biological, social, and cultural factors interact differently according to sex and geographical context, directly influencing motivation and adherence to physical activity.

The findings reinforce that addressing sedentary behavior in older age requires strategies that extend beyond simply increasing opportunities for physical activity participation and should include approaches that are sensitive to health conditions, intrinsic motivation, and the everyday demands of each group. Among women, particularly those living in urban areas, barriers appear to be associated with the burden of multiple social roles and the accumulation of responsibilities, whereas in rural settings they may result from a lack of appropriate facilities and limited access to health promotion programs. Therefore, multisectoral interventions integrating public policies, community-based initiatives, and professional support are essential to strengthen motivation, reduce physical and social limitations, and create environments that facilitate adherence to regular physical activity, thereby contributing to active and healthy aging.

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